

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 13 July 1998 (13.07.98)	
International application No. PCT/US97/22855	Applicant's or agent's file reference RCA 88228
International filing date (day/month/year) 15 December 1997 (15.12.97)	Priority date (day/month/year) 18 December 1996 (18.12.96)
Applicant KRANAWETTER, Greg, Alan et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
24 June 1998 (24.06.98)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer</p> <p>D. Moh</p> <p>Telephone No.: (41-22) 338.83.38</p>
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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

19

Applicant's or agent's file reference RCA 88228	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (PCT/IPEA/416)	
International application No. PCT/US97/22855	International filing date (day/month/year) 15/12/1997	Priority date (day/month/year) 18/12/1996
International Patent Classification (IPC) or national classification and IPC H04N7/50		
Applicant THOMSON CONSUMER ELECTRONICS, INC. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☐ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 24/06/1998	Date of completion of this report 12.01.99
Name and mailing address of the IPEA/  European Patent Office D-80298 Munich Tel. (+49-89) 2399-0, Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Authorized officer Luckett, P Telephone No. (+49-89) 2399-8965



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/US97/22855

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

2-31 as originally filed

1, 1/1 as received on 21/12/1998 with letter of 18/12/1998

Claims, No.:

1-15 as originally filed

Drawings, sheets:

1/21-21/21 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.
☒ claims Nos. 1-15.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/US97/22855

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

- ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 1-15 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet *Item VIII*
- ☒ the claims, or said claims Nos. 1-15 are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the said claims Nos. .

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item VII

- 1 The independent claim/s/ should preferably be cast in the two part form, Rule 6.3(b), PCT, with those features which in combination are part of the prior art (see document D1) being placed in the preamble. This is considered particularly appropriate in the present case as it is essential to the establishment of clarity in the independent claims in order to put any novel subject matter underlying the present application into its proper relationship w.r.t. the prior art known from e.g. EP-A-0687111 (D1), which as best seen in figure 5 thereof discloses a system for decompressing an MPEG coded data stream, recompressing the decompressed data for storage and then using plural decompressors to process the stored data.
- 2 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein. To reflect the state of the art adequately in the description, the document D1 should be identified in the opening pages and the relevant background art disclosed therein should be briefly discussed.

Re Item VIII

Certain observations on the international application

- 1 The independent claims are not supported by the description as required by Article 6 PCT, as their scope is broader than justified by the description and drawings. The reasons therefor are that the main embodiments concern detailed techniques of generating predetermined sequences of mutually interleaved data blocks having a highly specific relationship to each other and the source MPEG decoded input signal from which they are derived. The underlying problem addressed by these detailed features relates to an MPEG Rx system in which after conventional MPEG decompression Rx memory capacity requirements are reduced by re-compression of the decoded signal. This approach and the problem solved thereby are both well known in the state of the art (e.g. EP-A-0687111 (D1)). The description does not offer adequate technical support for the extremely vague and general features in the claims which go beyond this known system.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US97/22855

- 2 The features of the independent claims are cast in such broad and vague terms that these claims are not deemed to be adequately clear to enable a fair determination of their intended scope (Art 6, PCT).
- 3 The dependent claims are not in themselves capable of overcoming the obscurities identified in the respective independent claims since they do not go into sufficient detail concerning the points raised above. Because of this the clarity and support objection applies equally to each of the dependent claims.

5

PARALLEL DECODING OF INTERLEAVED DATA STREAMS WITHIN AN MPEG DECODER

Field of the Invention

10

This invention relates to processing digital image representative information.

Background of the Invention

15

Rapid advances in digital technology have produced corresponding advances in digital image signal processing in various fields such as high definition television (HDTV). The MPEG (Motion Picture Experts Group) signal compression standard for MPEG-2 video processing (ISO/IEC 20 International Standard 13818-2, January 20, 1995) is a related development. This widely accepted image processing standard has been found to be particularly attractive for use with satellite, cable and terrestrial broadcast systems including HDTV systems.

25 A digital HDTV terrestrial broadcast system recently adopted as the Grand Alliance HDTV system in the United States defines a standard of digital broadcast of high definition (HD) program material which has been data compressed using the MPEG-2 compression standard. A description of the Grand Alliance HDTV system is found, for example, in the 1994
30 Proceedings of the National Association of Broadcasters, 48th Annual Broadcast Engineering Conference Proceedings, March 20-24, 1994. The HD broadcast standard provides for image resolution up to 1920 pixels per line (horizontally) by 1080 lines (vertically). The MPEG-2 standard defines the procedures required to decompress the HD image for reproduction by a
35 display device such as in a television receiver. About 80 Mega bits (Mb) of memory is required by an MPEG decoder to properly decode an HD image as defined in the terrestrial broadcast standard. About 96 Mb of memory would be required in a consumer receiver.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

1/1

5 In an MPEG video signal decoder such as may be found in a television signal receiver, more than one image frame of memory is typically needed for decoding an MPEG coded digital datastream, which represents I, P and B image frames as known. Three frames of memory are generally needed for decoding an MPEG datastream. Two frames of memory are
10 needed to store reference I or P frame data, and an additional frame of memory is used to store B frame data.

An MPEG decoder includes a DPCM loop associated with a motion compensation function for producing finally decoded pixel samples, as
15 known. As disclosed in copending US Patent No. 5847762 issued December 8, 1998, the DPCM loop

AMENDED SHEET

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference RCA 88228	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 97/ 22855	International filing date (day/month/year) 15/12/1997	(Earliest) Priority Date (day/month/year) 18/12/1996
Applicant THOMSON CONSUMER ELECTRONICS, INC. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (see Box I).
2. ☐ Unity of invention is lacking (see Box II).
3. ☐ The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing

- ☐ filed with the international application.
- ☐ furnished by the applicant separately from the international application,
- ☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.

☐ Transcribed by this Authority

4. With regard to the **title**, ☐ the text is approved as submitted by the applicant
- ☒ the text has been established by this Authority to read as follows:

PARALLEL DECODING OF INTERLEAVED DATA STREAMS WITHIN AN MPEG DECODER

5. With regard to the **abstract**,

- ☒ the text is approved as submitted by the applicant
- ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is:

Figure No. 1 ☒ as suggested by the applicant.

☐ None of the figures.

- ☐ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 97/22855

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04N7/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	US 5 675 424 A (PARK JONG SEOK) 7 October 1997 see abstract see column 3, line 14 - column 5, line 24 see figure 6 & KR 9 509 680 B (LG ELECTRONIC INC) 25 August 1995	1-4, 6-10
P, X	GB 2 307 616 A (SAMSUNG ELECTRONICS CO LTD) 28 May 1997 see abstract see page 1, line 23 - page 1, line 30 see page 5, line 26 - page 6, line 20 see page 7, line 12 - page 7, line 24 see figure 1	1-4



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

31 March 1998

Date of mailing of the international search report

16/04/1998

Name and mailing address of the ISA

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Hampson, F

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 97/22855

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 688 135 A (DAE WOO ELECTRONICS CO LTD) 20 December 1995	1,2,5-7, 10
Y	see abstract	11
A	see column 2, line 44 - column 3, line 22 see column 4, line 7 - column 5, line 44 see figure 1	3,4,8,9, 12-15
X	EP 0 710 026 A (MATSUSHITA ELECTRIC IND CO LTD) 1 May 1996	1,6,7
A	see abstract see figure 1	2-5,8-15
X	CHALLAPALI K ET AL: "GRAND ALLIANCE MPEG-2-BASED VIDEO DECODER WITH PARALLEL PROCESSING ARCHITECTURE" INTERNATIONAL JOURNAL OF IMAGING SYSTEMS AND TECHNOLOGY, vol. 5, no. 4, 1 January 1994, pages 263-267, XP000565047	1,6,7
A	see page 265, right-hand column, line 17 - page 267, left-hand column, line 48	2-5,8-15
Y	EP 0 687 111 A (SICAN GMBH) 13 December 1995 see abstract see page 5, line 27 - page 5, line 37 see page 6, line 49 - page 7, line 23 see figures 1,5	11

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 97/22855

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5675424 A	07-10-97	KR 9509680 B	25-08-95
GB 2307616 A	28-05-97	JP 9200751 A	31-07-97
EP 0688135 A	20-12-95	CN 1126408 A	10-07-96
		JP 8009389 A	12-01-96
		US 5646690 A	08-07-97
EP 0710026 A	01-05-96	US 5623311 A	22-04-97
		EP 0710033 A	01-05-96
		JP 8130745 A	21-05-96
		JP 8228349 A	03-09-96
EP 0687111 A	13-12-95	DE 4419678 A	07-12-95
		DE 4436956 A	18-04-96
		CA 2151023 A	07-12-95